

**Change of Direction:** Sputnik has adapted its inverters to the new German directives  
**Catcher of Light:** Reimann Solar increases plant yield with textured modules and SolarMax inverters  
**The Czech Republic:** Nobility builds Czech solar parks with a total output of 40 megawatts  
**Winds of Change:** In Spain the SolarMax string inverters have developed into a new best-seller  
**Lower Bavaria:** Solea installs megawatt stations for the direct feed-in to the medium-voltage grid

# SolarMax Globe

The Customer Magazine of Sputnik Engineering AG    First Issue '10



**Wooden Hayrick instead of Concrete Station: The Swabian company Vento Ludens adapts their freestanding plants to the landscape**



### Wooden Hayrick instead of Concrete Station

The Swabian company Vento Ludens adapts their freestanding plants to the landscape.

solutions **04**



### Medium-Voltage for Lower Bavaria

Since December, the lower Bavarian company Solea AG has been utilising megawatt stations in their large-scale PV plants to directly feed into the medium-voltage grid.

solutions **07**



### A Change of Direction for Inverters

The new German medium-voltage directive demands that photovoltaic inverters no longer turn themselves off after a blackout.

technology **08**



### The Light Catcher from Erwitte

The company Reimann Solar has increased a solar plant's yield using textured modules and SolarMax inverters.

technology **11**



### 40 Megawatts for the Czech Republic

The young Czech company Nobility Solar Projects builds solar parks. In their plants they exclusively use SolarMax inverters from Sputnik Engineering AG.

market & trends **12**



### Winds of Change for Spanish PV Inverters

In Spain the SolarMax string inverters have developed into a new best-seller.

market & trends **13**

## Further Topics

### solutions

Page 7: The new inverter SolarMax 330C-SV

### technology

Page 9: Sputnik launches SolarMax TS Series

Page 10: Display device MaxVisio and generator connection box MaxConnect 12/16 plus

### internal

Page 14: New employees for Biel, Neuhausen and Paris

### service

Page 15: Practical tips from our hotline

*In a tiny shed, they screw their first inverters together in 1991. And three years later, at the Photovoltaic Conference in Amsterdam, they proudly exhibit the first transformerless inverter world-wide.*



*On forklifts they race through the new warehouse and on skis over the Swiss mountains. In 2006 drinking red and sparkling wine and eating ham, they celebrate the grand opening of the new subsidiary in Madrid.*

*At the Christmas party in Biel last year, Philipp Müller showed photographs and videos of a co-operative partnership that held longer than many marriages. He will not be present for the first time at the photovoltaic symposium in Bad Staffelstein this year. I will miss him.*

*Inis Krampitz*

Press Relations Officer of Sputnik Engineering AG



*Along with Philipp Müller, I founded Sputnik Engineering AG 19 years ago. Back then we made the first inverters in a construction shed. Since that time much has happened. Today we employ around 250 people at our Swiss headquarters as well as at our subsidiaries in Germany, France, Italy and Spain.*

*Philipp Müller decided to leave the company in this phase of its success to take on a new challenge in smaller surroundings. I wish him all the best and much success in this endeavour. In the future I will be the sole managing director and also take over the company shares of Müller. For I continue to trust in the strengths of a company run by its owner.*

*The company structure and organisation will basically remain the same. To ensure that this phase runs smoothly, we had already created new positions last year: Jürg Zehnder leads the new department Supply Chain Management, Andreas Mader Sputnik's Development Department. The latter was also in Müller's field of responsibilities.*

*My entire management team and I are convinced that we will master this new challenge and continue on our successful course. New markets and exciting projects await us. Read for yourself.*

*I wish you interesting and enjoyable reading.*

*Ch. von Bergen*

Christoph von Bergen,  
Managing Director of Sputnik Engineering AG



# Wooden Hayrick instead of Concrete Station

The Swabian company Vento Ludens adapts their freestanding plants to the landscape

Clad in wood, the little house stands in the middle of a gravel field. Ochre-coloured plain roof tiles cover its pointy gable. A bird feeder over the door entic-



**High-tech wooden hayrick:** Three Solar Max inverters transform the solar electricity of this megawatt station into grid-compliant alternating current.

es sparrows and woodpeckers. At first glance the wooden hayrick in the Swabian city of Ichenhausen does not look like a megawatt station of an inverter manufacturer. Only the steel door with the SolarMax logo and the yellow danger triangle give it away.

“We are not a classic project developer who only wants to maximise profit”, explains Horst Walz, managing director of the company Vento Ludens, which realised the freestanding system “Solar-park Deubach”. The solar plant should produce environmentally friendly electricity for 30 years. For this project, however, it is also important that it fits into the landscape. “So we have invested a part of our budget in various beautification measures”, emphasises Walz.

To this counts, for example, the wood cladding around the three concrete stations where a total of eight inverters are housed. With great care, the company, based in Jettingen, Germany, has also sown a large variety of regional plants between the rows of solar modules on the premises of a former gravel pit.

The solar park in Deubach, a district of the city of Ichenhausen, is Vento Ludens’ first freestanding system and, with an output of 2.8 megawatts, the largest in the region. Around 14,000 crystalline solar modules produce about three million kilowatt hours of electricity every year, which is enough for 850 four-member households. Which means as well that the solar plant saves 18,000 tonnes of carbon dioxide annually.

## Plant Information

Output	2.830 MW
Modules	14,216 monocrystalline solar modules from Sovello
Inverters	SolarMax 330C-SV (8x) in three wood-cladded SolarMax concrete stations
Pitch and Direction	pitch 28°, south
Commissioning	December 2009
Yield	1,040 kWh/kW

## Fund guarantees high returns

While drinking mulled and sparkling wine, eating fried sausages and German gingerbread, Walz and his project partners inaugurated the solar plant last December. In addition to investors, engineers, operators and journalists, regional politicians participated in the festivities in the heated beer tent. The



mayor of Ichenhausen, Hans Klement, praised in particular the greenery and design of the freestanding system. He was also impressed by "the super team, which set up and built the plant in only two months".

In total the solar project cost nine million euros. "At the Climate Change Conference in Copenhagen they are still negotiating, but Deubach has already acted", said Hans-Martin Herbel, managing director of the operating compa-

ny, at the inauguration. The solar park is a down-to-earth investment. All the investors come from the region. Private investors of the fund abakus balance GmbH & Co. KG raised the equity capi-

## Social, Creative and Enterprising

Horst Walz bought the company Ludo Fact in 1995 and developed it into one of Europe's leading board game manufacturers. With his branch office Vento Ludens, he has been planning and operating windpower plants for ten years, and in 2008 he added solar power plants to this. In this year alone Walz plans to build PV systems with a total output of 25 megawatts.



**You have long manufactured board games successfully. In Europe you belong to the leading companies. What motivated you to build solar power plants?**

We produce 13 million games a year. In 2014 this will rise to 20 to 25 million, and then the market will be saturated. Renewable energies will grow the

strongest in the next 50 years. I see a lot of potential in it.

I think the world needs two essential things: on the one hand, drinking water for everyone, and on the other, a shift in our energy perspective towards renewables. The social component is very important to me. That's why I built a well with a solar power plant in Burkina Faso with a few friends. And when my three children ask me one day why I was so rarely at home, I can tell them I spent my time meaningfully with both board games as well as with renewable energies.

**For the Deubach Solarpark you invested 100,000 euros in beautification measures. The inverter house looks like a wooden, Swabian hayrick. Several times a year, a professional gardener mows and harvests herbs and flowers that you have sown between the rows of modules. Why have you done this?**

We have rented the free space for 30 years. For this time we will remain the contact person for the local government and the land owners. It is important for us to carry out our projects in unison with all participants. That is why we built the system as we did, so that it fits optimally in the overall picture. We are not a classical project developer who solely wants to maximise profit.

**This year you want to install Solar Max inverters with a total output of 25 megawatts. What is it about Sputnik's products that has convinced you?**

Sputnik Engineering is a properly led, medium-sized company. In addition, Sputnik's branch office in Germany is only an hour away from our headquarters in Jettingen-Scheppach. The high-quality engineering in the SolarMax products and the company's vicinity convinced us.

tal. A consortium from nine regional banks took over the external financing. Hydroelectric, biogas and PV plants make up around 30 percent of abakus' investment volume, whereas the solar energy stands on the first position regarding renewable energies. Its portion should grow. "We want to expand the solar fund further and, of course, participate in the Solarpark Deubach II as well", says Herbel. The project partners want to build the system – with an output of 1.8 megawatts – on the same location in the spring of this year. In order to maximise the profit for the investors, who can get involved starting at 5,000 euros, Herbel is doing without a middleman. For the operators of the plant in Deubach, he anticipates returns of seven to eight percent.



The SolarMax inverters feed their electricity directly into the medium-voltage grid.



Party in the beer tent: Celebrating together, the project partners inaugurated the Solarpark Deubach in December.

### From Carcassonne to Solar Energy

"With our direct investments we can influence projects decisively", says Herbel, who places great emphasis on installing exclusively high-quality components from central-European manufacturers. He was, therefore, very satisfied with Vento Ludens' selection. The planners decided on monocrystalline silicon modules from the German manufacturer Sovello AG and on the Swiss SolarMax 330C-SV central inverters from Sputnik Engineering AG. Two to three inverters each feed their electricity from the three wooden hayricks directly into the medium-voltage grid of the local utility (see Page 7).

Vento Ludens' boss Horst Walz would also like to advance the solar business further. The emphasis of his company, however, "still" lies on making board

games. Vento Ludens is a subsidiary of Ludo Fact, the largest German board-game manufacturer, which sells 13 million games a year. The company delivers Carcassonne, the Settlers of Catan & Co to 170 publishing houses. In 2000 Vento Ludens began building wind power plants. The name – which means "he who plays with the wind" in Latin – alludes to its business sector.

In 2008 Walz installed his first PV plant. "We have almost reached the saturation limit of board games. Renewable energies will grow the strongest in the next 50 years", says the family father, who values both businesses highly. In 2010 alone, he plans to build PV plants with a total output of 25 megawatts. Since he focuses solely on freestanding plants with SolarMax inverters, his homeland will certainly get more electricity-producing wooden hayricks with bird feeders in the future.

# "We are investing in German solar energy projects"

Hans-Martin Herbel, managing director of abakus Finanz GmbH, has developed the solar fund for the PV plant in Deubach, Germany.



Renewable energies account for about 30 percent of the investment volume of the abakus group. Solar funds currently rank first, whereas you want to increase the percentage

even further. Where do you think the benefits lie when investing in photovoltaics?

The risk of solar investments is small. The recovery is very stable. For the Deubach Solar Park, I expect returns of about seven percent.

What role do renewable energies play in your life?

I would like to help Germany – by using regenerative energies – to become independent of energy imports from Venezuela, Russia or Iran. We have to move away from fossil energy sources and electricity from nuclear power. That is why I have set up a PV plant with a power of six kilowatts on my roof and

negotiated with my mayor in Grünwald about building a 3-megawatt freestanding system.

All of the investors in the Deubach Solarpark come from the region. Where do you see the future – in regional operating companies or in international funds?

For the next five to ten years, there will be enough to do in Germany. For the time being, we will therefore turn to German investors and invest exclusively in German projects. For this, we set great store on high quality components from central-European manufacturers, as for example, Sputnik Engineering AG.

## Plant Information: Solarpark Köching II

Output	5.67 MW
Modules	31,700 monocrystalline solar modules from Solea
Inverters	SolarMax 330C-SV (15x) in five SolarMax concrete stations
Pitch and Direction	Pitch 30°, south
Commissioning	December 2009



# Medium Voltage for Lower Bavaria

Since December, the lower Bavarian company Solea AG has been utilising megawatt stations in their large-scale PV plants to directly feed into the medium-voltage grid.

Within eight weeks, Solea AG built a solar power plant with a total output of 5.7 megawatts in the lower Bavarian city of Aidenbach. The company, specialised in component sales and construction of large-scale plants, commissioned the freestanding plant in December of last year. On a surface area of 15 hectares, Solea mounted just under 32,000 monocrystalline modules on a fixed mounting system

It comes from their own production: Solea's subsidiary PV Eiwa System Engineering manufactures assembly systems for fixed mounting and for tracking PV plants. The financing company Terra Mundus Süddeutschland GmbH from Munich operates the solar park. Solea employee Nicole Polkehn calculates that it will have paid for itself in 11 to 12 years.

## Eight Megawatt Stations by the end of February

For the first time, Solea is using Sputnik's new megawatt station in the "Solarpark Köching II". Fifteen new SolarMax 330C-SV inverters feed their electricity from five megawatt stations directly into the medium-voltage grid of the local utility.

Solea commissioned two further megawatt stations with three SolarMax 330C-

SV inverters each in December in the lower Bavarian city of Osterhofen as well. By the end of February Solea plans to increase the total output of the free-standing system to three megawatts by adding a further megawatt station and solar modules.

"Since the beginning in 2005, we have relied on the SolarMax inverter brand", explains Polkehn. In last year alone, the company sold 25 Sputnik SolarMax 300C central inverters in addition to the 24 inverters for the megawatt stations. "Due to the high reliability, the good efficiency and the supplier's reliability, our managing directors decided on using Sputnik's products", says Polkehn. "In this year we plan to realise projects with SolarMax inverters with a total output of 40 megawatts".

## Technical Information, SolarMax 330C-SV

AC nominal output	330 kW
MPP range	450 to 800 V
Maximum efficiency	98 %
Dimensions	120 x 80 x 200 cm <sup>3</sup>
Weight	1,200 kg
Protection Class	IP20
Ambient Temperature	-20 °C...40 °C

## The New Inverter SolarMax 330C-SV

Sputnik launched the central inverter SolarMax 330C-SV (SV stands for special voltage) in October 2009. The device has an output of 330 kilowatts and works in the MPP range between 450 and 800 volts. Up to such three inverters can be combined in a megawatt station, which then directly feeds into the medium-voltage grid.

The Swiss manufacturer has done without a transformer in the new device. "That way we were able to reduce the size and weight by more than half", explains Sputnik developer Michael Ernst. At the same time, he and his colleagues increased the efficiency by 1.5 percentage points in comparison to the preceding model and reduced costs as well. As with all SolarMax inverters, the SolarMax 330C-SV has been type tested by TÜV [the German Technical Inspection Agency]. In addition it fulfils the requirements of the BDEW [the German Association for Energy and Water Management] medium-voltage guideline, which has been in force in Germany since 2009 (see page 8).



# A Change of Direction for Inverters

The new medium-voltage directive of the German Federal Association of Energy and Water Management (BDEW) demands that photovoltaic inverters no longer turn themselves off after a temporary blackout. Sputnik Engineering AG has adapted their SolarMax products accordingly.

The sweltering heat drives sweat into their faces. Summer is hot like never before. Air conditioners and fans have to work longer and harder than usual. And the power plants reach the limits of their capabilities – the grid is overloaded. Then suddenly the energy supply breaks down. Lifts get stuck, frozen products in supermarkets begin to thaw, the machines in the factory stand still. What sounds like a scene from a horror movie has actually happened in Europe, Asia or America, again and again, in the last few years.

Solar power plants have not been able to help consumers up to now. They have had to shut themselves off during a power outage. In Germany this will now change. The new directive of the Federal Association of Energy and Water Management (BDEW) demands that solar inverters – which feed into the medium-voltage grid – support the grid in such a case from July 2010 on.

## Regulating active power dependent on frequency

Since 2009 solar plants in Germany have had to regulate their active power dependent on frequency in order to prevent short-term overloads. SolarMax inverters fulfil these demands when connected to the new data logger MaxWeb xp with the function MaxRemote. From a grid frequency of 50.2 hertz, the inverters automatically reduce the active power fed into the grid and increase it again when the frequency has reached a value of  $\leq 50.05$  hertz.

The data logger also fulfils the BDEW requirements upon grid security management. “The grid operator provides an active power set-point that the connected plants have to implement within 60 seconds”, explains Michel Ryser, assistant of the development leader at Sputnik Engineering in Biel. At first the utility operator sends a digitally coded

signal to a radio ripple control receiver. This then sends, by means of relays, digital signals that the data logger MaxWeb xp interprets and then, in turn, sends to all the connected inverters.

## MaxWeb xp: all functions are integrated

“Normally the grid operator signals four different power levels”, explains Ryser. With reference to the nominal power of the solar plant, they are 100 percent, 60 percent, 30 percent and 0 percent. At a 100-percent signal, the photovoltaic plant continues to operate as before, at a 0-percent signal, it turns itself off. If, however, commands requiring 30 or 60 percent are made, MaxRemote reduces the plant output accordingly. The SolarMax inverters do not need an additional interface converter, as many other inverter manufacturers use, for Sputnik has integrated all the functions directly into the data log-



ger MaxWeb xp. This reduces efforts and sinks costs.

The data logger sends the actual feed-in power via the SolarMax web portal or by e-mail to the grid operator. MaxWeb xp saves and logs all processes so that the plant operator can trace the relevant incidents.

### Providing reactive power in normal operation

The great change will come in July 2010. Then photovoltaic plants have to remain on grid during short power outages and also provide reactive power in addition to active power. The BDEW directive demands that photovoltaic inverters can be operated at a reactive power that corresponds to a displacement factor of  $\cos \phi = 0.95$  capacitive up to 0.95 inductive at the grid connection point.

The grid operator either gives a fixed or a variable reference value, which has to be attained within a time span of ten seconds up to one minute.

### Delivering short-circuit current

In a second step, starting at the beginning of 2011, inverters have to be able to support the grid dynamically by feeding in short-circuit current within 20 milliseconds. In an extreme case, the PV plants have to be able to give off 100 percent of nominal current as reactive current.

“Solar inverters are ideally suited for the new requirements”, explains Ryser. Technically, Sputnik Engineering has no problems implementing the new regulations. “Sputnik can easily integrate the new functions in the inverter.” SolarMax inverters fulfil the requirements, which

have been in force since 2009. In March Sputnik Engineering will present the new inverter series SolarMax TS for the first time in Staffelstein. It fulfils all requirements of the BDEW directive – even those that are required from January 2011 on; it will replace the C series in the summer.

“The new directive shows that grid operators are taking photovoltaic seriously”, says Ryser. “We want to replace conventional power plants with renewable energy sources and drive the expansion of photovoltaic further. Therefore, it’s important that we can also prop up the grid.”

# Compliant to Standards

## Sputnik launches the SolarMax TS series

The three new inverters of the SolarMax TS series have nominal outputs of 50, 80, and 100 kilowatts and operate in the MPP range from 430 to 800 volts. The devices are very compact and better protected against dirt than their predecessors of the SolarMax C series. In addition, Sputnik’s developers were able to increase the European efficiency rating from 94.8 to 95.5 percent and elevate the permissible ambient temperature range by five degrees.

A processor monitors the IGBT switch on the power stack, hence enhancing operating safety and reliability. Sputnik has replaced the electrolytic capacitors with film capacitors and thus increased the service life of the inverter by several years. DC and AC circuit breakers are now accessible from outside; that way, installers can separate the inverter safely from the grid before they open it. Moreover, several devices can be simultaneously switched off via an external switch. The new inverters communicate via RS 485 and Ethernet. The graphic display can be operated by using three keys.

### Pilot project in Wankdorf stadium

The TS series fulfils all requirements of the new BDEW medium-voltage directive. The inverters are able to feed in reactive

power, to remain on grid during brief grid malfunctions and to thus prop up the grid actively (see above). In addition, the devices conform to the new product safety standard EN 62109-1, which will likely go into effect in the spring.

The first SolarMax 100 TS has been running since December last year as part of a pilot project in the city of Bern’s Wankdorf Stadium “Stade de Suisse”. In March Sputnik will show the new series to the public for the first time at the photovoltaic symposium in Bad Staffelstein. From the summer the Swiss manufacturer will utilise the new technology in the SolarMax megawatt station.



### Technical information on the SolarMax TS series

	50 TS	80 TS	100 TS
AC nominal output	50 kW	80 kW	100 kW
MPP range	430 to 800 V	430 to 800 V	430 to 800 V
Max. DC voltage	900 V	900 V	900 V
European Efficiency at 450 V	95.5 %	95.5 %	95.5 %
Max. Efficiency	96.3 %	96.3 %	96.3 %
Dimensions (W x D x H)	100 x 76 x 141 cm <sup>3</sup>	100 x 76 x 141 cm <sup>3</sup>	100 x 76 x 141 cm <sup>3</sup>
Weight approx.	670 kg	800 kg	840 kg
Protection Class	IP20	IP20	IP20
Ambient Temperature	-20°C ... 45°C	-20°C ... 45°C	-20°C ... 45°C

# Data Display for Aesthetes

The new version of the display device MaxVisio can be operated using a touch screen.

Energy produced: 57 kilowatt hours; profit made: 26 euros; CO<sub>2</sub> saved: 63 kilograms – MaxVisio displays the daily values of a photovoltaic plant at a glance. Shortly before Christmas, Sputnik Engineering launched the new display device with a colour touch screen, which can be mounted on a wall as well as placed on a table. It shows the current output of a photovoltaic plant as well as its monthly, annual and total data curves. If the MaxMeteo sensor is installed additionally, the irradiation data and the solar cell temperature can also be read. An integrated data logger saves the measured values from one up to 20 inverters – and for ten years. This way plant values from the past can be compared with current ones at any time.

Over the Ethernet or the RS485 interface, MaxVisio can be connected with the SolarMax inverters without a hitch. If used as an independent data logger for smaller photovoltaic plants without remote monitoring, the device displays the data of the entire plant as well as those of the individual inverters. In addition, MaxVisio can be used as a local display together with the internet-based data logger MaxWeb. The latter then transfers the data of the PV plant automatically to MaxVisio. In this way, you

can monitor the current status of your PV plant and its yield data at any time without a computer.

## Update data with a USB stick

In addition to an attractive design, which even helps MaxVisio cut a good figure in a living room, Sputnik has equipped the display device with a series of further new properties as compared to its predecessor. “The new MaxVisio can be configured in many

ways – either via the colour touch screen, with a USB mouse or a keyboard”, explains Sputnik Product Manager Andreas Burkhalter. The Swiss manufacturer has, therefore, included a USB interface in the display device. With a USB stick, the data can be read, processed, saved and updated. Sputnik regularly places new software updates on its internet page, which can be downloaded free-of-charge.

Via the display colour – red, yellow or green – the status of the PV plant can be quickly identified. MaxVisio announces longer lasting errors with an acoustic signal. The new display device is available in the German, English, Italian, Spanish and French languages at your SolarMax vendor.

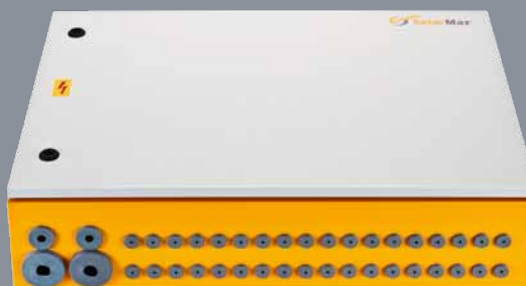


Dimensions (W x H x D)	160 mm x 160 mm x 40 mm
Weight	600 g
Mounting Type	Wall mounting or desk top
Protection Class	IP20
Electricity Supply	Plug-in Power Supply 230 VAC / 15 VDC (included)

## Light, small and beautiful: MaxConnect 12/16 plus

The new generator connection box MaxConnect 12/16 plus weighs, measures and costs less than its predecessor model. Sputnik launched the device at the end of January with a new design; it links up several module strings for connection to a SolarMax central inverter. With its aluminium housing, it can also be used near the coast. In addition to those on the positive pole, Sputnik has also installed fuses on the minus pole. The Class 2 Overvoltage Protection has benefits for insurance. As with the predecessor, MaxConnect 12/16 plus has integrated string current moni-

toring, which recognises reduced output and string malfunctions reliably and thereby minimises losses in yield.





# The Catcher of the Light from Erwitte

The company Reimann Solar has increased a solar plant's yield using textured modules and SolarMax inverters

Reimann Solar is booked solid until the end of March. Founded in 1995 and located in Erwitte, near Soest, Germany, the company builds solar power plants. "The demand has been extremely high since the end of 2009", said sales employee Berthold Schutzeichel in the middle of January. And due to the rumours that the feed-in tariff will be pared down additionally from April on, sales are still striving.

Since the beginning of the year, the tariffs for electricity from grid-connected solar plants have already sunk by nine to eleven percent. "For this reason, it is especially important to pay attention to purchasing inexpensive components", explains Schutzeichel. And yet that is not the only reason why Reimann Solar exclusively installs SolarMax inverters. "At Sputnik everything fits together perfectly. Besides the price, the technology and the service convinced us."

The specialised company has paid attention to quality since day one. "That is why we do not install Chinese modules. Besides SolarMax inverters, we rely above all on solar modules made out of pyramid glass for our plants, as manufactured, for example, by the company Naps." The Finnish module producer laminates polycrystalline solar cells with extra-white, deeply textured

glass. Similar to textured nylon backpacks and Goretex jackets, Naps roughens the surface of its material, the solar glass. While backpack and jacket manufacturers process their products to make them more resistant, module manufacturers texturise the solar glass so that it can better catch sunlight. The roughened surface structure directs a part of the light that has been reflected by the glass or the solar cell back again. This way, the solar cell has a second chance to absorb the photons.

## Greater Yield as with Tracking Systems

According to the angle of incidence, this "light trapping effect" can enhance the efficiency of the solar module from 3 to 20 percent. Indeed, the greatest increase in efficiency is attained when the light hits the surface obliquely, at an angle of 80 degrees to the vertical, which commonly occurs on façade plants, for example. "The increase in yield corresponds to that of a two-axis tracking module", explains Schutzeichel. Yet, for the latter, one needs to add significant costs for the mechanics and the guidance of the tracking system. "This has convinced our customers. More and more insist on pyramid glass due to the increase in yield", says Schutzeichel.



**"Everything fits":** Reimann Solar is convinced by the price, engineering and the service of the SolarMax inverters.

A 90-kilowatt system on the roofs of an Edeka grocery shop in Bad Sassendorf is one of Reimann's current reference plants using the pyramid glass technology. A display in the cashier area demonstrates to the customers the plant's output, CO<sub>2</sub> savings as well as its daily and overall yield. Sixteen string inverters from Sputnik Engineering AG transform the solar electricity into grid-compliant alternating current. The SolarMax 6000 S devices reach an efficiency of up to 97 percent. Schutzeichel continues, therefore, to rely on Sputnik. "Last year we installed 1,200 SolarMax inverters. This year that should rise to 2,400."



# 40 Megawatts for the Czech Republic

The young Czech company Nobility Solar Projects builds solar parks. In their plants they exclusively use SolarMax inverters from Sputnik Engineering AG.

The photovoltaic market in the Czech Republic is booming. While only four megawatts were installed three years ago, in this year alone Sputnik partner Nobility Solar Projects plans to install 40 megawatts and thus more than double its previously installed PV output by the end of 2010. "Since 2008 we have built solar power plants in the Czech Republic with a total output of 18 megawatts", says Roman Koči, sales director at Nobility Solar Projects. "We think that the market will develop very quickly this year."

The feed-in tariffs – newly introduced in 2007 – have made the market attractive for investors. Plant operators who commission their system in 2010 will receive the increased feed-in tariff of 49.63 eurocents for plants less than 30 kW, or 49.25 eurocents for plants above 30kW, or a "green bonus" of 42.9 eurocents or 42.5 eurocents per kilowatt hour, all for 20 years.

The Czech Republic plans to use the remuneration to accelerate solar electricity production in its own country.



**Solar financial investment: The high feed-in tariff makes solar plants extremely lucrative in the Czech Republic.**

After all, along with its entry into the European Union in 2004, it committed itself to increasing the percentage of renewable energies within total electricity production to eight percent by 2010.

## **Nobility is one of the leading system integrators in Eastern Europe**

The plants from Nobility Solar Projects contribute to this. The company was founded in the Czech city of Brno in 2008 and currently employs 25 people. It is specialised in the planning and construction of turnkey solar power plants in the Czech Republic and co-operates with 150 partners. In addition to seeing

a strong increase in the construction of its own plants, Nobility intends to expand its partner network further. "The Czech Republic is a very important market for us", says Sputnik's sales manager Daniel Freudiger. "I look forward to further, exciting projects. We have found a competent partner in Nobility, who is one of the leading system integrators in Eastern Europe."

Koči wants to use SolarMax inverters exclusively in his projects. "Only in this way can we secure our good service record. Sputnik Engineering has an excellent reputation and manufactures high-quality Swiss products, which we also recommend to our partners." Among Nobility's current projects count numerous large-scale plants, as do two 3.2-megawatt systems that the company commissioned near Brno, about 200 kilometres south-east of Prague, in June and November of last year. Operating in each of both plants are nine central inverters – SolarMax 300C. Roman Koči assumes that the plants will pay for themselves in less than ten years.



## Winds of Change for Spanish PV Inverters

While Sputnik Engineering has mostly sold central inverters to Spain for freestanding systems in the past few years, SolarMax string inverters have become new best seller since the middle of 2009.

The royal decree RD 1578/2008 of the Spanish government caps the additional construction of photovoltaic plants and reduces the number of large freestanding systems in particular. In Spain the installers, therefore, have been increasingly mounting PV plants on industrial roofs since mid-2009. Such systems demand smaller inverters. "We have a wide range of inverters with outputs from 1.8 kilowatts to 1 megawatt and have long been well established on the Spanish market. That's why we can adapt to the new requirements without any problems", explains Fernando Sánchez.

In his presentation at the Genera trade fair last year in Madrid, the managing director of Sputnik's Spanish branch office, Sputnik Engineering Ibérica S.L.U., gave valuable insight into Sputnik's production methods, quality management system and strategy for the Spanish solar market at the company's fair stand. A total of more than 26,000 international visitors were drawn to the energy and environment trade fair, Genera. "The best choice for Spain are

Sputnik's SolarMax S-series inverters", said Fernando Sánchez.

For the weather-proof string inverters from the SolarMax S series can be installed quickly and easily, have an efficiency of up to 97 percent and function at full nominal power even at ambient temperatures of 45 degrees Celsius thanks to their innovative cooling design. Convinced of the quality of its devices, the Swiss inverter manufacturer extended its guarantee in the middle of 2009 to up to 12 years.

### Spanish boss looks optimistically in the future

This has also convinced Sánchez's customer Sofos Solar. Based in Lleida, the company plans to build 30 PV plants with SolarMax string inverters by summer. "Sputnik Engineering is a reliable company and we trust the SolarMax brand", explains Sofos Solar's managing director Juan Mayoral. "Regarding Sputnik's string inverters, their technical specifications, their good value for the money as well as their 12-year guar-

antee all convinced us. In addition, Sputnik has set up an excellent infrastructure in Spain and offers comprehensive service and support". In the last few months, Sofos Solar has already built ten PV plants with outputs between 8.8 and 100 kilowatts using SolarMax string inverters.

Fernando Sánchez sees the further development of the Spanish solar market positively. "2009 was a difficult year for the entire PV branch. In addition to falling module prices and the credit crunch, the installations here were hampered by bureaucratic hurdles". For 2009 the Spanish boss anticipates additional construction of photovoltaics in his homeland to total only 150 to 200 megawatts. Since the second half of 2009, things, however, have been on an upwards turn. "Thanks to stable agreements with our customers, I am very optimistic about 2010", he says.

# New Managing Staff for Biel

Since December Hans-Georg Schweikardt has been leading Sputnik's Product Management at the company headquarters in Biel. Before that he worked for six years in Sputnik's German branch – at first as a sales engineer, then as a sales manager. "With this change to the headquarters I can better influence future product developments and also put my many years of market experience at the service of the company", says the 30-year old, who is looking forward to the new challenge. While he studied Industrial Engineering, he focused on international product management.

Formerly Sputnik's product management was placed under the Marketing Department. Along with Schweikardt's move to Biel, Sputnik's managing director Christoph von Bergen has separated this area and placed it directly under the general management. "With a strong product management team, we want to continue to expand our market position", explains von Bergen. "Hans-Georg Schweikardt brings excellent market and product knowledge to us. I am convinced that he will support our objectives in the long term – to launch new, successful products expeditiously."

Jürg Zehnder is the head of the new department Supply Chain Management. Logistics, process and production planning belong to this department, in addition to purchasing. "At Sputnik I can apply my abilities optimally", says the 45-year-old mechanical engineer. "I look forward to developing the profes-

sional logistics further." Before working at Sputnik, he led the areas Materials Management and Logistics at the Swiss Federal Railway (SBB) for nine years. Among his team are Fredy Meister as team coach for process and production planning, Daniel Thommen as team coach for operational purchasing and Beda Affolter, who is henceforth responsible for Sputnik's warehouse.

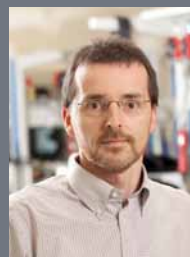
The 38-year-old graduate sales director Andrea Arnold works for the office sales service as the new team coach. For eight years she led this area for Huber+Suhner AG, before she began working for the Swiss Association for

Quality and Management Systems as the manager of customer service.

Sputnik's new head of development, Andreas Mader, brings along 15 years of professional experience. Before beginning at Sputnik, the Austrian led, among others, the electronics team of a German fuel cell manufacturer and set up the development department of a Swiss provider of construction and assembly solutions in Malaysia. "I was attracted by the leadership position at an international company in such an emerging solar branch" is how the 37-year-old graduate engineer describes why he works for Sputnik.



Hans-Georg Schweikardt



Jürg Zehnder



Fredy Meister



Daniel Thommen



Beda Affolter



Andrea Arnold



Andreas Mader

## Strengthening Sales and After Sales in Biel, Neuhausen and Paris



Christoph Steiner  
After Sales, Biel



Robert Arm  
After Sales, Biel



Bruno Langenegger  
After Sales, Biel



René Hechtl  
Senior Consultant Technical Sales Support, Biel



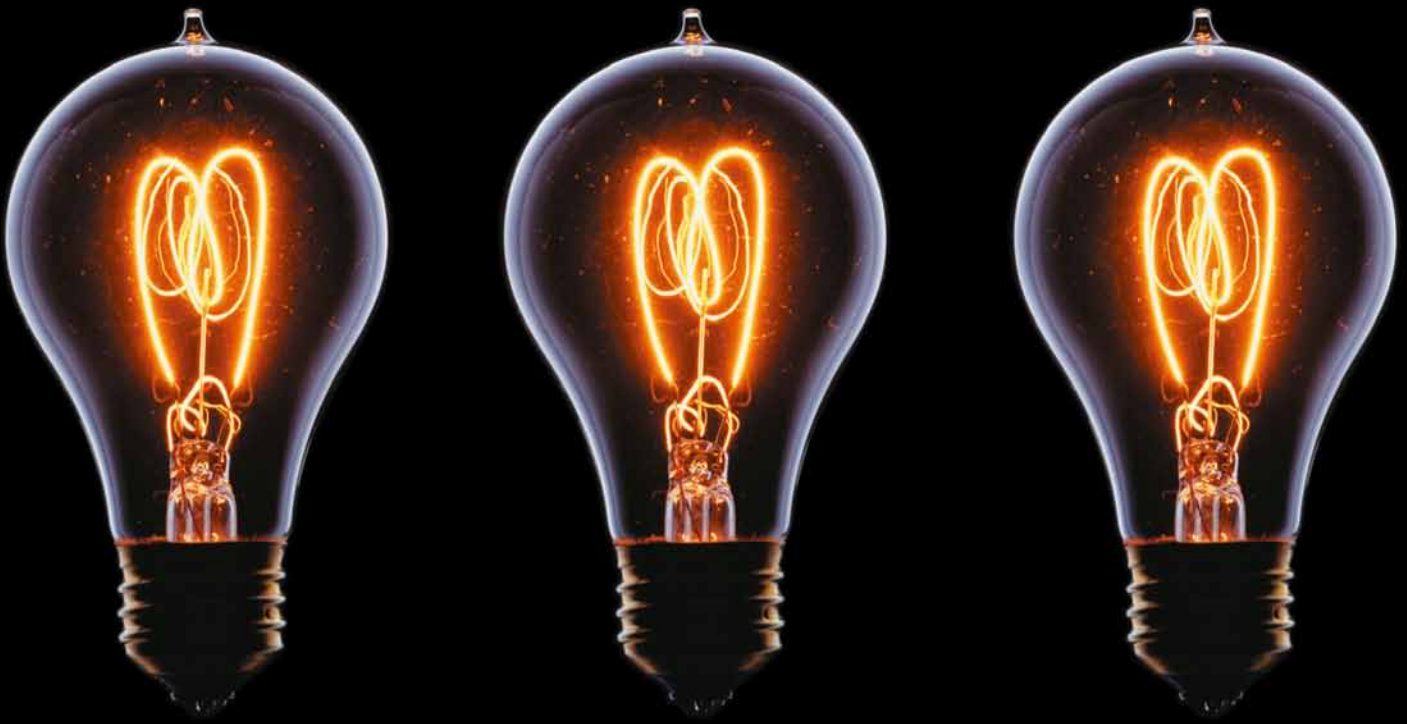
Thorsten Rack  
Sales Engineer,  
Neuhausen



Klaus Höhnle  
Sales Engineer,  
Neuhausen



Jocelyn Rogron  
Key Account Manager,  
Paris



## Practical Tips from Our Hotline

**To be able to visualise my plant data, I recently purchased Sputnik's new display device, MaxVisio with colour touch-screen. I have had some difficulty configuring MaxVisio via the display. Can I also edit the settings via an interface?**

MaxVisio has a USB interface to which you can either connect a USB mouse or a USB keyboard. In this way you can edit the configuration quite simply via the keyboard or mouse.

**Two months ago, my PV plant went online. Now I have bought the new display device MaxVisio with touch-**

**screen. Can I add the data of my PV plant retroactively?**

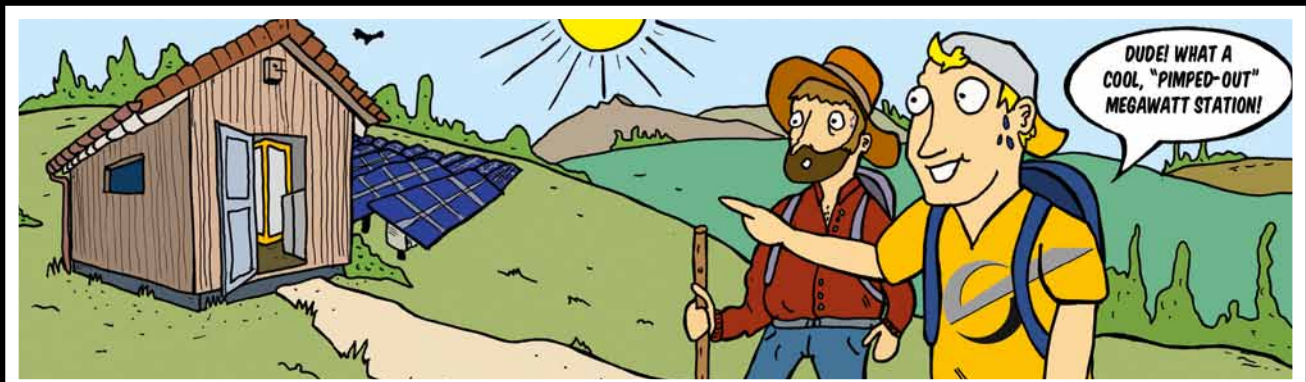
Yes, via the USB interface of your MaxVisio, you can add the data as well as change them. First, export the database of your MaxVisio as a csv file onto a USB stick. Then, process the file with Excel and subsequently transfer the processed csv file with the USB stick back onto your MaxVisio.

If you would like to back up data you have previously collected, you can do it in the same manner. Simply choose the menu item Backup in the Menu Settings ► Backup data / restore.

**On your internet page [www.solar-max.com](http://www.solar-max.com) I have read that a new version of the software for MaxVisio can now be downloaded. How can I install this new version on my display device?**

Download the software from our internet page and save it in the root directory of a USB stick. Place the USB stick in the USB interface of your MaxVisio. Now you can conduct the software update via the touch-screen display using the menu items Settings ► Update ► Start Software Update.

## Mr. SolarMax



## Contact

**Sputnik Engineering AG**  
Höheweg 85  
CH-2502 Biel/Bienne  
Tel. + 41 / (0) 32 346 56 00  
Fax + 41 / (0) 32 346 56 09  
info@solarmax.com

Sales in Germany:  
**Sputnik Engineering GmbH**  
Schurwaldstraße 12  
D-73765 Neuhausen auf den Fildern  
Tel. +49 / (0) 7158 986 19 0  
Fax +49 / (0) 7158 986 19 11  
info-de@solarmax.com

Sales in Spain:  
**Sputnik Engineering Ibérica S.L.U.**  
Calle de San Eustaquio 20  
Poligono Industrial La Resina  
Villaverde  
E-28021 Madrid  
Tel. +34 / 91 710 04 27  
Fax +34 / 91 797 18 57  
info-es@solarmax.com

Sales in Italy:  
**Sputnik Engineering Italia S.r.l.**  
Via Pola 23/b  
I-20034 Giussano (MI)  
Tel. +39 / 0362 311 625  
Fax +39 / 0362 312 263  
info-it@solarmax.com

Sales in France:  
**Sputnik Engineering France S.A.R.L.**  
26/28 rue de Londres  
F-75009 Paris  
Tel. +33 (0) / 1 78 42 40 31  
Fax +33 (0) / 1 78 42 40 43  
info-fr@solarmax.com



## Imprint

SolarMax Globe is published three times a year and is available free-of-charge from Sputnik Engineering AG.

**Publisher:**  
Sputnik Engineering AG  
www.solarmax.com

**Editorial:**  
Press Office Krampitz, www.pr-krampitz.com

**Layout:**  
weiss communication + design ag, www.wcd.ch

**Photo Credits:** All photos are the property of Sputnik Engineering AG, apart from Terra Mundus Süddeutschland (p. 7), Reimann Solar (p. 11, 2x), Nobility Solar Projects (p. 12, 2x), Sofos Solar (p. 13).

All trademarks are recognised even without expressed identification. Subject to technical modifications. We assume no liability for incorrect information.

Copyright 2010 for all contributions rests with Sputnik Engineering AG. All rights reserved. Reprints only with the written approval of the publisher.

## Subscription

I would like to receive the Magazine "SolarMax Globe" regularly. Please send me the next issues free-of-charge until further notice.

Family Name \_\_\_\_\_ Country \_\_\_\_\_  
First Name \_\_\_\_\_ Telephone \_\_\_\_\_  
Company \_\_\_\_\_ Fax \_\_\_\_\_  
Street \_\_\_\_\_ E-mail \_\_\_\_\_  
Postcode / City \_\_\_\_\_ Date, Signature \_\_\_\_\_

**by fax to: +49 / 7158 / 986 19 11**  
**or by mail to: Sputnik Engineering GmbH, Schurwaldstrasse 12, D-73765 Neuhausen (Germany)**